METCALF ENERGY CENTER
DATA REQUEST AND RESPONSES (99-AFC-3)

Technical Area: Cultural Resources
CEC Authors: Kathryn Matthews and Dorothy Torres
MEC Authors: Jim Bard

ISSUE: The applicant has provided Confidential Figure 8.3-4b and Figure 2.2-7. When these figures are compared, they appear to indicate that "Newly Discovered Archaeological Resources 1&2" (archaeological loci) may be affected by construction of the project site, laydown area or access roads. In addition, site CA-SCL-448 may be affected by construction of the proposed recycled water line.

35. Please provide a map in the scale of 1:500. On this map, please indicate the relationship of newly discovered archaeological resources No. 1 & 2 to the MEC project site, laydown area, and the proposed and alternate access roads. Please indicate the boundaries of the field survey around the MEC project site, laydown area and proposed and alternate access roads. Also, include a discussion of observed features in the vicinity of newly discovered loci.

    Response: Subsurface archaeological testing of newly discovered archaeological resources No. 1 and 2 was conducted in late August 1999 by backhoe trenching. As will be discussed in the revised Section 8.3 of the AFC document, this subsurface testing yielded negative results. No subsurface archaeological deposits are present at the locations of newly discovered archaeological resources No. 1 and 2.

    Based on the recently completed subsurface testing, it now appears that newly discovered archaeological resources No. 1 and 2 are limited to those surface artifacts already reported in the AFC. Archaeological resources No. 1 and 2 cannot qualify as archaeological sites since no archaeological deposits are actually present. Hence, these resources have no meaningful boundaries and are best interpreted as isolated surface finds whose provenience has been changed by plowing. Archaeological resources No. 1 and 2 are not significant archaeological resources and need receive no further consideration or investigation. Since these sites do not qualify as archaeological sites, no additional information is provided for these sites. Attachment CR-35 contains a copy of the subsurface testing report.

ISSUE: Staff must conduct an independent analysis of the potential for the project to impact cultural resources. Information on generalized construction methods or procedures provides an indication of the potential for construction to cause impacts to previously unknown, subsurface cultural resources.

38. For the linear facilities, please discuss the expected maximum and typical width and depth of any required trenches for below-ground pipelines or transmission line disturbances. Also discuss the estimated maximum and typical (or "not-to-exceed" limitations) width of surface disturbance on either side of proposed linear facilities.

Response: Additional pipeline design engineering has been completed. Therefore, we are resubmitting the response to Data Request 38 to provide a more accurate response. This response supercedes the prior response.

Electrical Interconnection

The proposed transmission system interconnection is described in AFC Section 5.2.2. Since the proposed interconnection is entirely overhead and no new transmission towers or modification to the foundations of the existing interconnection tower will be required no excavation will be required. The proposed interconnection is further described in the Detailed Facilities Study report submitted to the Commission on July 8, 1999.

Underground Pipelines

Descriptions of the construction practices to be employed in the construction of the natural gas supply and water supply and discharge pipelines for the project are provided, respectively, in AFC Sections 6.4 and 7.3. The following information summarizes and supplements that information.

Natural Gas Supply

The bulk of the 1-mile length of the proposed natural gas supply pipeline will be constructed by conventional open cut trenching. The remainder will be constructed by boring, micro-tunneling, and horizontal directional drilling. The segments to be constructed by each method are defined in AFC Sections 6.2 and 6.3.

It is anticipated that the pipeline ditch will be excavated in soil for the entire alignment. The depth of cover for the 16-inch diameter pipeline will typically be a minimum of 30 inches away from roads, or as required by future land use activities above the pipeline, such as farming (west of Monterrey Road, it is expected that a depth of cover of 8 feet will be required to protect the pipeline from damage from farming activities). At road crossings, in accordance with national gas pipeline design standards, the depth of cover measured at the drainage ditches adjacent to the road, will be a minimum of 3 feet, or deeper to provide adequate clearance with pre-existing utilities. In accordance with railroad specifications for uncased gas pipeline crossings, the pipeline will be installed a minimum of 10 feet below the UP railroad tracks.

The width of the pipeline trench will vary depending upon the required pipeline depth of burial and the actual soil conditions encountered in each segment. The anticipated maximum width of the cut will vary from approximately 5 feet across open fields to up to 20 feet where increased depth of cover is required. The width of the temporary workspace required for pipeline construction corridor will be up to 75 feet.

Coyote Creek, Monterey Road, and the Union Pacific Railroad will be crossed by a single segment of 16-inch pipeline, installed by the HDD (horizontal

directional drilling) method. The estimated length of this HDD segment is approximately 1200 feet. At both the entry and exit points of the HDD segment, temporary pits in the ground are required to contain the drilling mud which is circulated down-hole during the pilot hole drilling and reaming operations. The pits required will be approximately 5 feet to 10 feet deep and approximately 10 feet by 30 feet in area. Temporary workspace required during installation of the HDD segment will include an area of 150 feet by 100 feet at both the HDD entry and exit sites, to accommodate the HDD rig and support equipment and other facilities. In addition, a temporary workspace will be required approximately 50 feet wide by 600 feet long, in a line with the HDD segment and leading to the northwest of the HDD exit point, to accommodate two segments of the prefabricated 16-inch diameter constructed prior to 'pull-back' during installation of the HDD segment.

Water Supply and Wastewater Discharge Pipelines

Additional information regarding water supply and waste water discharge lines will be supplied in Calpine/Bechtel's Supplemental filing the week of September 20, 1999.

ISSUE: Proposed recycled water line segments A, H, I and the proposed domestic water line extend through areas designated as sensitive for cultural resources.

39. Please perform a pedestrian survey of the proposed recycled water line segments A, H, I and the proposed domestic water line to determine the presence or absence of native soils. If any areas of native soils are present, please conduct a field survey of those areas and provide the results. Please provide a map at a scale of 1:24,000 showing the area(s) surveyed and any cultural resources discovered. On the same map, indicate the railroad line, the railroad right of way, and the centerline of proposed trenches.

Response: On August 24 and 25, 1999, CH2M HILL conducted a pedestrian reconnaissance of the recycled water line segments A, H, and I as well as the proposed route modification along Santa Teresa Boulevard. Although a portion of the Santa Teresa Boulevard route passes through fully developed lands, open ground was examined at every opportunity. Where open ground was available, excellent surface visibility conditions provided good exposure of surface sediments. No indications of cultural resource sites or isolates were observed along any of the segments (A, H, and I) or along the Santa Teresa Boulevard route. A supplemental AFC filing is being prepared to support the revised Santa Teresa Boulevard water routes. The supplemental filing will include a revised Section 8.3 which will contain a plot of the locations of exposed native soils that were inspected during the August 24 and 25, 1999 pedestrian reconnaissance on an appropriate map exhibit.

As will be explained in the revised Section 8.3 of the AFC, no subsurface trenching was conducted within the existing railroad line right-of-way due to lack of access rights from the railroad. Nevertheless, the subsurface testing

conducted in late August 1999 adjacent to the railroad right-of-way, in the corridor of the domestic water line between the plant site and the well site, produced negative findings. A detailed map exhibit will be included in the supplemental AFC filing showing the relationship between the over 25 individual test trenches and the plant site, including the existing railroad line in the immediate plant site area.

Technical Area: Hazardous Materials Management
CEC Author: Rick Tyler
MEC Authors: Frederick Tornatore, Mary Beth Yansura

ISSUE: Staff must assess the potential for impacts on public health in the event of an accidental hazardous materials release. Project specific information is required to perform this analysis.

48. In the Application for Certification, Section 8.12.3, a protocol for analysis of public vulnerability to an accidental ammonia release was provided. [a.] Please provide the results of the vulnerability analysis described in Section 8.12.3. [b.] An analysis of an accidental release of hydrochloric acid should also be provided using a similar model and model parameters.

Response:

a. An analysis was performed to determine the impacts of an accidental release of aqueous ammonia from the proposed MEC. The current facility design includes a 15,000-gallon tank for storage of 28 percent aqueous ammonia, which will be used for control of nitrogen oxides emissions from the combustion turbines.

A worst case release scenario was analyzed which presumes tank failure and release of the ammonia solution into a secondary enclosure. As the solution leaks out of the primary tank it pushes clean air out of a 1 foot diameter vent at the top of the secondary enclosure tank. Ammonia begins to vaporize from the liquid and fills the head space in the secondary tank. The gaseous ammonia then leaks from the secondary enclosure vent. The release rate was calculated assuming mass transfer of ammonia across the liquid surface occurs according to principles of heat transfer by natural convection.

The gaseous ammonia leak was then evaluated to predict the impact to the surrounding ambient air. This impact is quantified as a maximum concentration and is compared to the Emergency Response Planning Guideline 2 (ERPG-2) identified for ammonia in the EPA Accidental Release Prevention Provisions (40 CFR 68), which is 200 parts per million (ppm). The ERPG-2 is defined as the concentration below which almost all people could be exposed without irreversible or other serious health effects that would impair their ability to take protective action.

The methodology used follows that recommended in the EPA Offsite Consequence Analysis Guidance (EPA August 1996). The mass emission rate calculated as described above was modeled using the EPA dispersion model TSCREEN. The 1-foot diameter passive vent at the top of the secondary enclosure, which is 12 feet (3.66 meters) above ground, was assigned an exhaust velocity of 0.2 feet per minute (0.001 meters per second). The guidance indicates the use of a meteorological

condition of F stability and 1-meter per second wind speed when evaluating a worst case release. Based on the IBM meteorological data, the highest temperature associated with this stability/wind speed combination is 80 degrees Fahrenheit. This temperature was used in the emission calculation since this would produce the highest mass emission rate. The model was run using this temperature for both the exhaust and ambient temperature, which prevented the model from taking credit for increased plume buoyancy. The information used as input to the model is shown in Table HM-1.

Table HM-1. TSCREEN Model Inputs

Emission Rate (grams/second)	0.499
Release Height (meters)	3.66
Vent Diameter (meters)	0.305
Exhaust Velocity (meters/second)	0.001
Exhaust and Ambient Temperature (Kelvin)	299
Land Use Coefficient	Rural
Distance to Property Line (meters)	37

Results

The model was set to calculate both a 30-minute and 1-hour average concentration. The maximum concentration calculated for both 30-minute and 1-hour average was 13.4 ppm, on a 30-minute average, which is far below the ERPG-2 concentration of 200 ppm. Therefore, no adverse health effects are anticipated from the worse case accidental release scenario of ammonia from the primary storage tank.

Technical Area: Visual Resources
CEC Author: Gary Walker/Joe Donaldson
MEC Author: Tom Priestley, Environmental Vision, Sierra Research

83. The AFC (p.8.11-15) states that "the landscape plan calls for planting a row of tall growing evergreen trees (pinus halepensus, redwood, or similar species) 15 feet on center along the east side of the plant site and access road in the area along the UPRR tracks. On the south side of the plant site, in the area south of the access road, a row of tall, evergreen screening trees is also called for. In this area, the plan specifies eucalyptus saligna or similar species. In the area along the southern edge of the plant site and along the western edge of the access strip that connects the site to Blanchard Road, informal clusters of oak and other trees will be established."

a. Please provide the landscape plan, showing the proposed locations for the different species proposed.

b. Please provide the rationale for selection and placement of each species.

Response:

a. A detailed landscape plan, which shows the proposed location for the different species proposed for the MEC, has been prepared for the project by Guzzardo and Associates, Inc, Landscape Architects. A copy of this plan has been provided as a part of the response to Data Request #50 submitted to the CEC on August 23, 1999. This landscape plan is subject to revision or modification based on consultations with the City of San Jose, Santa Clara Valley Water District, and CEC.

b. The rationale for the selection and placement of each species is summarized below. The discussion is organized in terms of the site's primary landscape zones.

Monterey Road Frontage

Black walnut trees (Juglens hindisii californica) are to be planted along the western edge of Monterey Road in a single line to recreate the row of Keesling walnut trees that once existed in this area. Re-establishment of this tree row will restore the historic cultural landscape pattern of the road edge, creating a sense of visual continuity with the segments of the highway to the north and south where the Keesling walnuts still remain. In addition, as the trees mature, their canopies will screen views toward the site and will focus the attention of travelers on the roadway corridor and away from the existing transmission corridor and planned power plant.

In the area between the row of walnut trees and the railroad tracks, live oak (Quercus agrifolia) and valley oak (Quercus lobata) trees and elderberry (Sambucus mexicana) shrubs will be planted in a naturalistic pattern. Some plants of this species are already growing in the corridor

along the railroad, and the proposed planting will reinforce and expand the landscape pattern that these plants create. The forest-like landscape pattern created by this planting will relate visually to the forested area on the highway's east side in this area. As this planting matures, it will create an informal, naturalistic screen that will combine with the row of walnut trees along the road's edge to significantly block views of the plant from Monterey Road.

The Monterey Road plantings will be installed at the time project construction begins, allowing the plants to get established and to start to grow during the two-year construction period.

In addition to restoring the historic landscape pattern along the road corridor, the plantings along the Monterey Road frontage (as well as along the riparian corridor) will also provide important habitat values, compensating for the loss of existing trees on the main plant site. The trees lost from the MEC site will be replaced at a 3 to 1 ratio. The Santa Clara Valley Water District requires replacement trees to come from seed plant stock within the Santa Clara Valley watershed. Seed material will be collected from the MEC site and/or from the immediate vicinity by a local nursery in September 1999, and grown in tree pots equivalent to traditional 5-gallon containers. The replacement tree transplants will be available for planting in the fall of 2000.

Orchard Area

The portion of the site south of the plant and alongside the access road will be planted with Chinese hackberry (Celtis sinensus) trees, which will be planted in regular rows to simulate the appearance of an orchard. This planting scheme is consistent with the landscape guidelines of the North Coyote Valley Industrial Campus Plan, which call for establishment of orchard-like plantings in parking lots and in other building setback areas in the industrial campus. The orchard-like area will create a visual transition between the energy center and the industrial campus to the south where similar landscape treatments are likely to be a major element of the landscape pattern in the future. This tree species was selected for the orchard area because hackberries grow quickly; have a regular form which will contribute to creation of a regular, orchard-like landscape composition; and will maintain their upright form in spite of the area's windy conditions. In addition, the use of hackberry trees for this area avoids the significant maintenance issues that use of traditional orchard trees would entail.

Fenced Plant Site

The southern edge of the fenced portion of the plant site will be bordered by a double row of coast redwood trees (Sequoia sempervirens), which are expected to reach 40 feet in height in 20 years. This tree row is intended screen the lower elements of the plant in views from the industrial campus to the south. The hedgerow created by these trees repeats the patterns of the east-west hedgerows, which are a relatively common feature in the landscape of the Coyote Valley. The hedgerow also makes a reference to the landscape pattern in the Edenvale district to the north, where a long row of redwoods and other evergreens planted behind the Keesling walnut trees and railroad tracks on the westside of Monterey Road is used to screen views of the large industrial zone to the west.

For the evergreen hedge planned for the area along the railroad tracks on the fenced area's east side, California wax myrtle (Myrica californica) has been specified. This shrub/small tree has been selected because it grows quickly, creates an effective year-round visual screen, and presents a neat appearance. The primary goal of this hedge is to screen views into the site for passengers on the trains that travel past the site.

In the areas around the small buildings along the southern edge of the fenced area, Chinese pistache (Pistachia chinensus) will be planted to provide shade and amenity for workers on the site. Like the Chinese hackberry trees that will be used in the orchard area, the Chinese pistache trees grow quickly, have a regular form, and will maintain their upright form in spite of the area's windy conditions. In addition, the Chinese pistache trees produce brilliant fall color which will add an element of seasonal interest.

Riparian Corridor

Native species, including California buckeye (Aesculus californica), California sycamore (Platanus racemosa), Fremont cottonwood (Populus fremonti), California live oak (Quercus californica), valley oak (Quercus lobata), toyon (Heteromeles arbutifolia), coffeeberry (Rhamnus californica), California blackberry (Rubus ursinus), and blue elderberry (Sambucus mexicana) have been specified for planting along the riparian corridor. The trees for planing on the riparian corridor will come from seed/plant stock in the Santa Clara Valley watershed (see previous section on Monterey Road Frontage). The intent is to expand on the existing areas of riparian vegetation to maximize the corridor's habitat value and to screen the views of the plant from the creek corridor. The periwinkle (Vinca major), identified as a riparian zone groundcover in the original landscape plan, will not be used because its use is discouraged by the City's riparian corridor guidelines. Instead, a mix of the groundcover species specified as suitable by the guidelines will be

used as part of an effort to restore more natural groundcover conditions to the corridor.

Fisher Creek is a man-made drainage channel that was created in the late 1800s or early 1900s, and is now managed by the Santa Clara Valley Water District. It has recently been learned that the District has strict policies against planting in its drainage channels or on the levees that define them. Because of this policy, the planting plan for the riparian corridor may have to be modified, with an emphasis on placement of plants in the areas beyond the edge of the levees. The project's biological specialist and landscape architect will be working closely with both the Santa Clara County Valley Water District and the City of San Jose to reconcile differences between local flood control policies and local land use policies regarding landscaping of riparian zones to develop a final landscape plan for the riparian corridor that will be consistent with the policy goals of both the flood control and the land use entities and that will maximize both aesthetic and habitat values.

c. As agreed to with CEC staff, in response to data request items 82.c and 83.c., simulations depicting the appearance of the plant from KOPs 2 and 3 at 5, 10, and 20 years after the start of operation are being developed.

ISSUE: The applicant's data adequacy response (pp. 8.11-15 to 8.11-16) states that "under almost all circumstances, no visible water vapor plumes will be seen eminating [sic] from the plant's HRSG stacks. However, there may be a few occasions during the year when temperatures are low and humidity is high that condensed steam may be visible coming out of the stacks. These conditions are expected to occur primarily at night and in the early morning hours. Staff needs to know how the characteristics of the HRSG exhaust stack plume for the project.

91. In regard to the HRSG exhaust stack plumes, please provide the following information:

a. Quantified estimates of the expected maximum and average height and width.

b. The data, assumptions, and calculations used to derive these estimates, including the model used.

c. Quantified estimates of the expected frequency of occurrence and duration, specifying:

i. the number of hours that the plume will be visible, for each hour of the day per year;

ii. the total number of hours per year that the plume will be visible;

iii. the percentage of the total number of hours per year that the plume will be visible;

iv. the number of daylight hours per year that the plume will be visible; and

v. the percentage of daylight hours per year that the plume will be visible.

d. The data, assumptions, and calculations used to derive these estimates, including the model used.

Response: The potential for the HRSG exhaust stacks to emit visible water-vapor plumes is minimal and is not expected to occur based on a review of similar facilities. However, due to the high sensitivity of potential visual impacts, the facility will incorporate, as part of the plant design, an economizer bypass system that will be used to eliminate a visible water-vapor plume during the rare occurrence of meteorological conditions that may cause visible plumes to occur.

92. Please discuss the feasibility of measures to abate potential visible plumes from the HRSG stacks.

Response: Please see Data Request 91. An economizer bypass system will be used to eliminate visible water-vapor plumes. A similar system has been successfully utilized at the Crockett Cogeneration Plant.

ISSUE: AFC Table 8.11-2 shows an auxiliary boiler stack as a major power plant feature. However, the AFC does not address the potential for visible plumes from the auxiliary boiler stack.

93. In regard to auxiliary exhaust stack plumes, please provide the following information:

a. Quantified estimates of the expected maximum and average height and width.

b. The data, assumptions, and calculations used to derive these estimates, including the model used.

c. Quantified estimates of the expected frequency of occurrence and duration, specifying:

i. the number of hours that the plume will be visible, for each hour of the day per year;

ii. the total number of hours per year that the plume will be visible;

iii. the percentage of the total number of hours per year that the plume will be visible;

iv. the number of daylight hours per year that the plume will be visible; and

v. the percentage of daylight hours per year that the plume will be visible.

d. The data, assumptions, and calculations used to derive these estimates, including the model used.

Response: Calpine/Bechtel have determined that the Auxiliary Boiler is not necessary to operation of the MEC, and can be deleted from the project scope. The AFC Supplement, currently in preparation for submittal the week of

September 20, 1999, will confirm this decision and adjust all aspects of the project's environmental aspects accordingly.

Technical Area: Water Resources
CEC Authors: Joe O'Hagan and Mary Elizabeth
MEC Authors: Toni Pezzetti and Dave Richardson

ISSUE: The AFC indicated that there would be at least 20 daily workers once the plant is constructed, it may be necessary to obtain a small water system permit, if groundwater is available for potable use. Cross-connection controls may be required to ensure that potable water supplied onsite is not contaminated with recycled water, since the recycled water will only be treated for industrial use. Additionally, the AFC (2-10) indicated that 30,000 gallons of water would be available for plant service water during any interruption of the normal supply of potable water.

124. Please contact the Department of Health Services (DHS) and submit to the California Energy Commission information indicating whether or not a permit is required. If the DHS determines that a small water system permit would be necessary, submit to the California Energy Commission all information provided to DHS.

Response: MEC will have less than 24 workers. Facilities with less than 24 workers are not required to obtain a small water system permit, based on discussions with DHS (Personal Communication, Leah Walker, DHS, 707-576-2295). Therefore, MEC is not required to apply for a small water system permit.

ISSUE: A City of San Jose Water Resources Policy (San Jose 2020 General Plan) states that the City should not permit urban development to occur in areas not served by a sanitary sewer system. The elimination of reliance on septic systems for wastewater disposal protects groundwater resources from septic contamination. The AFC (2-12) stated that sanitary wastewater would be disposed on site using a package sewage treatment plant. The AFC (8.14-14) further stated that the accumulated waste would be periodically removed by truck for disposal at the WPCP.

128. Please submit all information necessary to obtain a permit to install and operate a packaged sewage treatment plant in Santa Clara County.

Response: A meeting has been scheduled with the City of San Jose to discuss the requirements for the construction and operation of a packaged sewage treatment system. We expect to be able to provide the requested information by October 1, 1999.

ISSUE: Two alternatives have been identified as sources of water should service of recycled water by San Jose/Santa Clara WPCP be interrupted. Both alternate water sources, San Jose MUNI and on-site wells rely on groundwater resources. The City of San Jose Water Resources Policy (San Jose 2020 General Plan), states that water resources should be utilized in a manner which does not deplete the supply of surface or groundwater, and efforts to conserve and reclaim water supplies, both local and imported, should be encouraged.

133. Please submit a copy of the will-serve letter from the City of San Jose indicating that 4,100 gpm will be supplied and under what conditions.

Response: This letter has been requested from the City of San Jose and will be provided to the CEC upon receipt.

ISSUE: The AFC (8.14-2) stated that a well inventory was not conducted because access to the California Department of Water Resources (DWR) well records could not be obtained. California Energy Commission staff has contacted the DWR and pursuant to Water Code section 13752 may authorize access to well records within the zone of project influence. Specific well identification data shall remain confidential and shall be provided to the California Energy Commission pursuant to California Energy Commission Siting Guidelines Appendix B (16)(D) and Title 20, California Code of Regulations, section 2501 et seq., unless well owner permission is granted.

140. Submit a one-mile radius well survey including all domestic, industrial, and irrigation wells that may be affected by the extraction of groundwater necessary to serve the needs of the project. This survey should be conducted for proposed on-site well locations and any existing wells being considered to serve the project. Include also information regarding well construction details and any preliminary pump test information reported to the DWR.

Response: Wells within a one-mile radius of the MEC site were summarized based on the search of the California Department of Water Resources' (DWR) well logs and visual identification of other wells that are not on file with DWR. Wells were located based on the map description and visual confirmation, where necessary. Not all wells could be located. Table WR-1 summarizes applicable data compiled from the well records. The attached map (Figure WR-140) shows the identified well locations.

ISSUE: The estimated reduction of groundwater outflow from the basin at Coyote Narrows of up to 15 percent did not consider other future groundwater users in the Coyote Valley Basin.

141. Submit additional analysis assuming complete build-out of the already planned Coyote Valley Campus Industrial Development and residential development to the south of Bailey Road.

Response: A meeting has been scheduled with the City of San Jose to discuss the planning assumptions for the Coyote Valley Campus Industrial Development. We expect to be able to provide the requested information by October 1, 1999.

ISSUE: The "Phase I Environmental Site Assessment" prepared by Environmental Resource Management (ERM) identified a leaking underground fuel tank (LUFT) site approximately 0.5 miles upgradient of the proposed power plant site, assuming that groundwater flows in the vicinity of the LUFT site from south to north (regional groundwater flow direction). The potential exists for MTBE to affect groundwater extraction operations is evidenced by a 1998 shutdown of a Great Oaks Water Company well due to low levels of MTBE contamination. If MTBE has contaminated groundwater beneath the Universal Gas site (8125 Monterey Road) then onsite groundwater pumping associated with the proposed project could alter the local gradient increasing the migration potential of MTBE.

The data summarized in Table 8.14-2 (8.14-6) suggests that MTBE as well as chlorinated solvents have been detected in groundwater planned for MEC use.

144. Please clarify if these data are estimated or actual values and the identity of the well from which these samples were collected.

Response: The water quality data from MUNI wells #21, #22, and #23 has been requested, but not received. Copies will be provided when available.

Table WR-140. Inventory of Known Wells within a One-Mile Radius of the MEC Site[a]

MAP REF #	T	R	SEC	TRT	#	LOG #	TOTAL DEPTH	SCREEN TOP	SCREEN BOTTOM	YEAR DRILLED	WELL TYPE[b]	STAT[c]	TEST YIELD (gpm)	COMMENTS
16-1	8S	2E	16	R		546643	280	120	280	1995	PRIV SUPP		500+	multiple screens; at Parkway Lakes
21-1	8S	2E	21	B	01	348479	44	26	41	1990	MW	D?		Kaufman & Broad investigation
21-2	8S	2E	21	B	02	324557	45.5	24	38	1990	MW	D?		Kaufman & Broad investigation
21-3	8S	2E	21	B	03	324558	46	27	41	1990	MW	D?		Kaufman & Broad investigation
22-1	8S	2E	22	B	01	170972	20	15	20	1986	TW	unk		
?	8S	2E	22	P	01	170290	35	15	35	1985	TW	no loc		
22-2	8S	2E	22	P	02	170100	20	7	20	1985	MW			UST investigation
22-3	8S	2E	22	P	03	466283	25	10	25	1993	MW			UST investigation
22-4	8S	2E	22	P	04	466282	25	10	25	1993	MW			UST investigation
22-5	8S	2E	22	P	09	424597	202	122	202	1992	DOM		100	
22-7	8S	2E	22	P							DOM	NL		
22-6	8S	2E	22	Q	01	170743	25	20	25	1986	TW	unk		
?	8S	2E	27	A	07	170074	150	108	148	1985	DOM?	LOC?	15	
27-1	8S	2E	27	E	01	170497	21	9	21	1985	TW	AB		
27-2	8S	2E	27	H	01	170764	20	15	20	1986	TW	unk		
27-3	8S	2E	27	M	02	348455	28.5			1987	PIEZO	AB		
28-1	8S	2E	28	H							IRR	NL		

NOTES:

[a] This table includes well records found at DWR, and other wells that have been visually identified during field visits to the Coyote area. Other wells exist, but have not been identified at this time.

[b] DOM = domestic well
IND = industrial supply well
IRRIG = irrigation well
MUN = municipal supply well
MW = monitoring well
PEIZO = piezometer
PRIV SUPP = private supply well
SEIS = seismic study well
TW = test well
VE = vapor extraction well

[c] D = destroyed
D? = probably destroyed, but no record available from DWR
NL = no log, well located visually
AB = abandoned, not destroyed according to state requirements
LOC? = location not able to be estimated from well record

Figure WR-140. Location of Water Wells within 1-Mile of MEC.

Attachments

Attachment CR-35

Attachment CR-35

ARCHAEOLOGICAL PRESENCE/ABSENCE TESTING PROGRAM

METCALF ENERGY CENTER
CITY OF SAN JOSE, SANTA CLARA COUNTY, CALIFORNIA

FOR

CH2M HILL, INC.
2485 Natomas Park Drive
Suite 600
Sacramento, CA 95833-2937

Attn: Mr. John Carrier
Dr. James C. Bard

BY

BASIN RESEARCH ASSOCIATES, INC.
1933 Davis Street, Suite 210
San Leandro, CA 94577

SEPTEMBER 1999

TABLE OF CONTENTS

FIGURES

1.0 INTRODUCTION

The proposed Metcalf Energy Center project is located in the Coyote Valley in the southern portion of the City of San Jose, Santa Clara County, California. Calpine Corporation and Bechtel Enterprise Holdings propose to construct a 600-megawatt natural gas turbine electrical generation plant. The plant would use natural gas from a Pacific Gas & Electric Company (PG&E) pipeline, recycled water for cooling, and transmit the electricity via a transmission line to the PG&E Metcalf Substation located across Monterey Road to the immediate west for distribution.

The *Cultural Resources Study* prepared by CH2M HILL in early 1999 (Bard and McClintock 1999) for an *Application of Certification* (AFC) for submission to the California Energy Commission (CEC) discusses the results of an archival literature review and field inventory undertaken to determine whether cultural resources were present and could be adversely affected by the proposed project. The field survey of the proposed plant site, laydown areas, transmission line and a proposed access road/recycled water/natural gas pipeline alignment paralleling the west side of the Monterey Road/Union Pacific Railroad tracks from Blanchard Road north resulted in negative findings. No prehistoric or historic archaeological remains were located and no historically or architecturally significant buildings or structures were noted (see Bard and McClintock (1999).

Pre-construction presence/absence testing was recommended for the Metcalf Energy Center to ensure that project construction did not result in the inadvertent discovery of buried archaeological sites. Bard and McClintock (1999) noted that because Coyote Creek has periodically flooded the valley floor and because the valley itself accumulates sediments eroding down from the hills that flank it on both sides, archaeological sites on the valley floor or at the base of alluvial/colluvial fans have become buried beneath overburden sediments. This conclusion has been confirmed by the inadvertent discovery of buried archaeological resources over the past 30 years either during subsurface construction or as a result of deliberate, systematic exploratory trenching by archaeologists. Presence/absence testing was recommended for the power plant site and laydown area, the proposed access road, the electrical transmission line, a proposed natural gas line, and a domestic water line.

As a result of the recommendations, CH2M HILL authorized a backhoe test program with the purpose of determining the presence/absence of subsurface cultural resources within selected areas of the proposed project area prior to construction. This establishes the horizontal and vertical extent of subsurface cultural resources and determines the integrity and significance of any resource(s) in accordance with the criteria of the California Register of Historical Resources.

1.1 PROGRAM PARAMETERS

The backhoe testing program focused on three areas within the proposed Metcalf Energy Center. Area 1 (North), the proposed location for the generation plant and support facilities, covers the area north of the proposed south boundary fence to the south bank of Fisher Creek. Area 2 (South), the alignment for the proposed access road and a probable utility corridor, parallels the west side of the Monterey Road/Union Pacific Railroad tracks from Blanchard Road north to the proposed south boundary fence of Area 1. Area 3 consists of two discrete loci in the immediate vicinity of Fisher Creek in the area south of the Area 1 boundary fence and north of Blanchard Road. These two loci each had several culturally modified Franciscan chert flakes noted during the field inventory (Dr. James C Bard, CH2M HILL, personal communication, 1999).

Twenty-four backhoe test units (BTU), generally ca. 2 feet wide and 5-10 feet long by 6-8+ feet deep, were excavated between August 24-25. Fourteen BTUs were placed in Area 1, seven in Area 2 and three in Area 3 (two in one locus and one in the other). All BTUs were intuitively placed except for the three in Area 3, which were placed within the defined area of each locus.

Unit placement in Area 1 was constrained by existing buildings, structures and numerous trash disposal locations. Units in Area 2 were placed just west of an existing unimproved road to avoid the Union Pacific Railroad right-of-way and to minimize crop damage at the property owner's request. No testing was undertaken in the area between the proposed south boundary fence and Blanchard Road to avoid damage to existing field crops.[1]

Standard recordation methods were used including schematic profiling and photography. A no collection policy was followed. All test trenches were backfilled (but not mechanically compacted) after recordation.

1.2 TEST RESULTS AND AREA SPECIFIC MANAGEMENT RECOMMENDATIONS

1.2A Area 1

No cultural materials were exposed in any of the 14 BTUs. No further management is required including monitoring during subsurface construction. However, it is recommended that if any unanticipated prehistoric or significant historic era cultural materials are exposed during construction grading and/or excavation, operations should stop within 25 feet of the find and a qualified professional archaeologist contacted for evaluation and further recommendations. Potential recommendations could include additional research, evaluation, collection, recordation, analysis, etc. of any significant cultural materials followed by a professional report.

1.2B Area 2

No cultural materials were exposed in any of the seven BTUs. No further management is required including monitoring during subsurface construction. However, it is recommended that if any unanticipated prehistoric or significant historic era cultural materials are exposed during construction grading and/or excavation, operations should stop within 25 feet of the find and a qualified professional archaeologist contacted for evaluation and further recommendations. Potential recommendations could include additional research, evaluation, collection, recordation, analysis, etc. of any significant cultural materials followed by a professional report.

1.2C Area 3

No cultural materials were exposed in any of the three BTUs excavated in the two loci. However, since these areas are adjacent to Fisher Creek and minor surface cultural material was noted during the field inventory at each loci, it is recommended that an archaeological monitoring program[2] be implemented during subsurface construction within 100 feet of the loci and within an area approximately 150 feet east of Fisher Creek from the northernmost loci south to Blanchard Road to ensure that as yet unknown cultural resources are not inadvertently affected by project related activities. The duration and intensity of the monitoring program should be determined by the Monitoring Archaeologist. The program could range from full time monitoring to "as needed" inspections on either a regular or intermittent basis throughout ground disturbing construction operations. In the case of an "inadvertent discovery", the Monitoring Archaeologist should have the authority to temporarily halt construction operations within 25 feet of a find or resource exposure to determine if significant or potentially significant cultural resources are present and if they will be adversely affected by continuing construction operations. Potential mitigation

1. Mr. Mark Passantino, property owner, requested that the testing program minimize damage to the field crop. All test locations within the proposed access road and at the two loci were discussed with and approved by Mr. Passantino.

2. *Archaeological Monitoring* refers to the controlled observation and regulation of construction operations on or in the vicinity of a known or potentially significant cultural resource in order to prevent or minimize impact to the resource.

recommendations could include additional research, evaluation, collection, recordation, analysis, and reporting of any significant cultural materials (see Bard and McClintock 1999: Section 8.3.4.2).

1.3 MANAGEMENT SUMMARY

No further management is required including monitoring during subsurface construction in either Areas 1 or 2.

For Area 3, archaeological monitoring during subsurface construction is recommended during subsurface construction within 100 feet of the loci and within an area approximately 150 feet east of Fisher Creek from the northernmost loci south to Blanchard Road to ensure that as yet unknown cultural resources are not inadvertently affected by project related activities. The duration and intensity of the monitoring program should be determined by the Monitoring Archaeologist. The Monitoring Archaeologist, in the case of an "inadvertent discovery", should have the authority to temporarily halt construction operations within 25 feet of a find or resource exposure to determine if significant or potentially significant cultural resources are present and if they will be adversely affected by continuing construction operations. Potential mitigation measures could include additional research, evaluation, collection, recordation, analysis, etc. of any significant cultural materials.

It is further recommended that a cultural resources contingency clause be included in the General Conditions section of any excavation contracts to alert the contractor to the potential for the exposure of Native American and/or possibly significant historic era cultural resources during subsurface construction and the field and notification procedures to be followed in the event of their discovery.

2.0 PROJECT LOCATION AND DESCRIPTION

The proposed Metcalf Energy Center area is bounded by the south and east banks of Fisher Creek on the north, Blanchard Road on the south, Monterey Road/Union Pacific Railroad tracks on the east and west (T 8S, R 2E, United States Geological Survey [hereafter USGS], Morgan Hill, Calif.[ornia], 7.5' quadrangle topographic map, 1980 Unsectioned and Santa Teresa Hills, Calif. 1980) [Figures 1 and 2].

The project would be constructed at the base of Tulare Hill, just where the valley narrows from the encroaching Yerba Buena Hills from the northeast and the Santa Teresa Hills (and Tulare Hill) from the west. Fisher Creek flows into Coyote Creek just a short distance to the northeast of the Metcalf Energy Center.

Calpine Corporation and Bechtel Enterprise Holdings propose to construct a 600-megawatt natural gas turbine electrical generation plant. The plant would use natural gas from a Pacific Gas & Electric Company (PG&E) pipeline, recycled water for cooling, and transmit the electricity via a transmission line to the PG&E Metcalf Substation located across Monterey Road to the immediate west for distribution.

3.0 RESEARCH SOURCES CONSULTED AND RESULTS

A *Cultural Resources Study* for the proposed Metcalf Energy Center was prepared by CH2M HILL in early 1999 (Bard and McClintock 1999) for an *Application of Certification* (AFC) for submission to the California Energy Commission (CEC). This study discusses the results of an archival literature review and field inventory undertaken to determine whether cultural resources were present and could be adversely affected by the proposed project.

A total of 136 cultural resource studies have been conducted within the project APE and/or within a one-mile radius of the project area (preferred corridors and all other studied corridors). Important studies include those associated with the North Coyote Valley Assessment District infrastructure improvements and other reports commissioned by private Coyote Valley industrial park developers; studies associated with new or improved transportation infrastructure projects including State Highway 101, Caltrain extensions, the Highway 85/101 interchange, Capitol Expressway, Route 82, Yerba Buena Road, Branham Lane, Senter Road, Snell Road park and ride, Route 85/87; various pipeline and water recycling projects including the South Bay Recycled Water Project; dams and water distribution; the PG&E Metcalf Substation; the Alamitos, Evergreen and Coyote Canal projects; fiber optic cable right of ways; redevelopment projects and master plan amendments and updates; and, numerous compliance reports and environmental documents associated with private development (see Bard and McClintock 1999 and references therein). None of the reports on file include the proposed plant location.

Forty-four (44) prehistoric and historic sites are present within a one-mile radius of the proposed plant site and linear corridors. Three sites have been determined eligible for the National Register of Historic Places. None of the other sites have been evaluated.

No recorded sites are within or adjacent to the proposed plant location. In general, this area of Santa Clara County is noted for the presence of significant, subsurface prehistoric archaeological resources as well as historic resources associated with the early development of the area.

No city, county, state and/or federal historically or architecturally significant structures, landmarks or points of interest are located in or adjacent to the project.

4.0 BACKGROUND REVIEW

4.1 ENVIRONMENT

The general study area, located east of Coyote Creek and at the base into the foothills/hills of the Diablo Range and north of Santa Teresa Hills, appears to have located within an area favored by Native Americans for both occupation and hunting and collecting activities. The Metcalf project area was favorably situated for aboriginal occupation with Coyote Creek and other seasonal water sources lying in close proximity. These water courses and associated small basins and other slight topographic depressions were foci of prehistoric occupation with Native American groups exploiting a variety of ecological niches on the low grasslands of the alluvial plain dotted with spring-fed marshes and basins and the adjacent foothills.

4.2 NATIVE AMERICAN

4.2A Prehistoric

Native American occupation and use of the general area appears to extend over 5000-7000 years and may be longer. Archaeological information suggests an increase in the prehistoric population over time with an increasing focus on permanent settlements with large populations in later periods. This change from hunter-collectors to an increased sedentary lifestyle is due to more efficient resource procurement but with a focus on staple food exploitation, the increased ability to store food at village locations, and the development of increasing complex social and political systems including long-distance trade networks. The information obtained from archaeological studies in the general area has played a key role in refining both the local and regional interpretations of Native American history for central California. General overviews and perspectives on the regional prehistory can be found in C. King (1974, 1977, 1978a), Moratto (1984), and Elsasser (1986). Bard and McClintock (1999) provide a detailed review of central California prehistory.

4.2B Ethnographic

The aboriginal inhabitants of the Santa Clara Valley, a group known as the "Costanoan" and derived from the Spanish word *Costanos* ("coast people" or "coastal dwellers"), occupied the central California coast as far east as the Diablo Range (Kroeber 1925:462). The project area is within the *Tamyen* (*Tamien*) territory of the Costanoan, close to the boundary with the *Mutsun* Costanoan (also known as the *Ohlone*; Galvan 1967/68; Margolin 1978). Based on Spanish mission records and archaeological data, researchers have estimated a population of 1000 to 1200 individuals for the *Tamyen* group in 1770 (Levy 1978:485; C. King 1977:54). Within the *Tamyen* area, the population was further subdivided into tribelets. In 1770, these tribelets were politically autonomous groups containing some 50-500 individuals, with an average population of 200. Tribelet territories, defined by physiographic features, usually had one or more permanent villages surrounded by a number of temporary camps. The camps were used to exploit seasonally available floral and faunal resources (Levy 1978:485;487).

The majority of project area is located in what was the territory of the *San Juan Bautista* tribelet, whose primary settlement was probably situated in the vicinity of the Guadalupe River with Alamitos Creek (Levy 1978:485). C. King (1977:42) assigned both the Coyote and Almaden Valleys to individuals from the rancherias of San Carlos. According to King, this tribelet's primary village, *Matalan*, was located near *La Laguna Seca* in Coyote Valley (C. King 1977:42, 1978b:469); *Laguna Seca* being only a few thousand feet away from the Metcalf Energy Center. Roop (1976) noted that the village of *Matalanes* or *Masalanes* was a major center of political power at the time of Spanish contact and is identified with archaeological site CA-SCl-2 (located less than a mile to the southwest of the Metcalf Energy Center. Milliken (1995:229, Map 5, 248) referred to the *Matalan* as a Costanoan speaking tribe who held the Santa Clara Valley corridor from the present town of Coyote to the present town of Morgan Hill.

In contrast to Levy, King places the San Juan Bautista tribelet in the Hillsdale area of San Jose (C. King 1978b:438). While Kroeber identified no villages in the project area, he included the Coyote area within the territory of the northern Santa Clara Valley Costanoan (Kroeber 1925:465). Historic accounts of the distribution of Costanoan tribelets and villages in the 1770s-1790s along with the results of archaeological investigations in the area suggest that several tribelets may have temporarily camped within the project area vicinity throughout the prehistoric period and into the Hispanic Period (Kroeber 1925:465; T. King 1973; King and Hickman 1973)

In addition, a major prehistoric and historic trail from San Pablo Bay/Lower Sacramento Valley Delta south to the Pajaro River (approximating the current corridors of State Highway 17 and Monterey Road/former State Highway 101) proceeded through the general study area (Elsasser 1986:48, Table 4, Fig. 10).

The Costanoan aboriginal lifeway apparently disappeared by 1810 due to its disruption by new diseases, a declining birth rate, and the impact of the mission system. The Costanoan were transformed from hunters and gatherers into agricultural laborers who lived at the missions and worked with former neighboring groups such as the Esselen, Yokuts, and Miwok (Levy 1978:486). Later, because of the secularization of the Missions by Mexico in 1834, most of the aboriginal population gradually moved to ranchos to work as manual laborers (Levy 1978:486). For a comprehensive review of the Costanoan see Kroeber (1925), Levy (1978), T. King (1973), C. King (1974, 1977, 1978b), King and Hickman (1973), Elsasser (1986), Bean (1994), and Milliken (1995). For an extensive review of regional and Santa Clara Valley prehistory see C. King (1974, 1977, 1978a-b), Elsasser (1978, 1986), T. King (1973), and T. King and Hickman (1973) and Daniel, et al. (1983).

4.3 HISTORICAL BACKGROUND

Recorded history in Santa Clara County can be divided into three periods: the Spanish Period (1769-1821), the Mexican Period (1821-1848), and the American Period (1848-present).

4.3A Spanish Period

The period of initial historic exploration of the Santa Clara Valley lasted from 1769 to 1776. Between 1769 and 1776 a number of Spanish expeditions traversed the area including those led by Portola, Fages, Fages and Crespi, Anza, Rivera, and Moraga (Levy 1978:486). Even though the routes of the early explorers cannot be accurately determined, a number appear to have been within the project vicinity. These include the expeditions of Pedro Fages in 1770, Pedro Fages and Father Crespi in 1772, Fernando Javier y Moncada Rivera and Father Francisco Palou in 1774, Bruno de Hezeta-Palou in 1775, and Anza and Font in 1776. Still later, more Spanish expeditions passed near the approximate vicinity including those led by Alferez Gabriel Moraga in 1806, and Jose Viader accompanied by Moraga in 1810, and Jose Dolores Pico in 1815 (Beck and Haase 1974:17, 20, 21).

Mission Santa Clara de Asis, the 8th of the 21 missions founded in California, was established on January 18th, 1777 (Hall 1871:48; Hart 1978:388). As one of seven missions within Costanoan territory, Mission Santa Clara would have been the mission with the greatest impact on the aboriginal population living in the vicinity (Hart 1978:96). Moreover, Mission Santa Clara provided all the religious needs of the Pueblo San Jose de Guadalupe until 1851 (Hall 1871:84). The Spanish philosophy of government was directed at the founding of presidios, missions, and secular towns with the land held by the Crown (1769-1821), while the later Mexican policy stressed individual ownership of the land (Findlay 1980:6). The study area was probably used for grazing cattle as the export of tallow and hides was a major economic pursuit of the Santa Clara Valley and California during the Spanish Period.

4.3B Mexican Period

During the Mexican Period (1821 to 1848) and into the American Period, the project area was situated at the southern end of *Rancho Yerba Buena* or *Socayre* and the northern end of *Rancho La Laguna Seca* and included a portion of The Alvirez Field, Lot #38 (Thompson 1857; Wallace 1858; Thompson and Herrmann 1881; Thompson and West 1876:60-61).

No Spanish Period adobe dwellings or other structures have been reported in or adjacent to the proposed Metcalf Energy Center (Hendry and Bowman 1940:940-942, 954-956). Metcalf Road terminates at Monterey Road and is the most important historic era feature in the study area. This former Spanish road, and later stage road from San Jose to Monterey corresponds to the approximate alignment of the present-day Monterey Road (State Route 82). It began in downtown San Jose, forming the boundary between Pueblo Tract No. 1 and Pueblo Lot No. 6, extended through *Rancho Santa Teresa* and *Rancho La Laguna Seca* and on to Monterey (Thompson and Herrmann 1881; Thompson and West 1876:61).

The Mexican Period witnessed the secularization of the missions as the Spanish-colonial system collapsed and the lands fell out of mission control. By 1845, most of the land holdings were in the form of large ranchos. Increasingly bad relations between the United States and Mexico led to the Mexican-American War of 1847, which resulted in Mexico releasing California to the United States under the Treaty of Guadalupe Hidalgo in 1848.

4.3C American Period

In the mid-19th century, much of the rancho and pueblo lands and some ungranted land was sub-divided as the result of population growth, the American takeover, and the confirmation of

property titles. Growth was attributed to the Gold Rush (1848), the completion of the transcontinental railroad (1869), and construction of local railroads. Later, the development of the refrigerator railroad car (ca. 1880s), which was used to transport local agricultural produce to distant markets, had a major impact on the Santa Clara Valley.

During the later American Period and into the Contemporary Period (ca. 1876-1940s), fruit production became a major industry (Broek 1932:76-83). Fruit production/processing held steady until after World War II. In recent decades this agrarian land-use pattern has been gradually displaced by residential housing, commercial centers, and the development of research and manufacturing facilities associated with the electronics industry leading to the designation of the general region as the "Silicon Valley."

Monterey Road, part of which passes the Metcalf Energy Center, is the most important historic era feature in the project area. Throughout the American Period, Monterey Road functioned as the main stage coach road from San Francisco to Los Angeles (Beck and Haase 1974:51-53). The section between San Jose and Gilroy/Watsonville was originally a toll road, but was declared a public highway in 1874 (Sawyer 1922:149).

Railroads replaced stage travel along the corridor in the late 1860s. The Santa Clara and Pajaro Valley Railroad started service between San Jose and Gilroy in April, 1868 while the competing the San Francisco and San Jose Railroad reached Fifteen Mile House-Perry Station (about four miles south the project area) in January, 1869 and Gilroy by March, 1869. The Southern Pacific Railroad took control of the route on December 31, 1870 (Hall 1871:311; Thompson and West 1876:37, 61; James and McMurry 1933:103-104; Miller 1948:93; 99; Hoover et al. 1966:431; Beck and Haase 1974:51-53).

5.0 PRESENCE/ABSENCE TESTING PROGRAM

Pre-construction presence/absence testing was recommended for the proposed Metcalf Energy Center to ensure that project construction did not result in the inadvertent discovery of buried archaeological sites.[3] Cultural resources in the Coyote Valley of southern Santa Clara County are found either on the surface or beneath the surface (e.g., they are inadvertently discovered during construction or discovered as a result of deliberate exploratory trenching by archaeologists). Because Coyote Creek has periodically flooded the valley floor and because the valley itself accumulates sediments eroding down from the hills that flank it on both sides, archaeological sites on the valley floor or at the base of alluvial/colluvial fans have become buried beneath overburden sediments. Testing was recommended for:

Metcalf Energy Center power plant site and laydown area
Proposed Access Road
Proposed Electrical Transmission Line (T-Line)
Proposed Natural Gas Line
Domestic Water Line

3. Pre-construction testing is a form of enhanced survey in that surface survey cannot, in normal circumstances, result in reliable detection of buried archaeological sites. Subsurface testing, therefore, completes the survey by compensating for the presence of site-obscuring overburden. Previous researchers have successfully employed backhoe trenching to detect buried archaeological sites in the immediate project vicinity (see. Anastasio, et al. 1986, 1987a, 1987b, and 1990; Bard, et al. 1982; Daniel, et al. 1983; Dietz 1977; and Hall, et al. 1988)

5.1 PROGRAM OBJECTIVES

CH2M HILL, as a result of the recommendations in the *Cultural Resources Study*, authorized a backhoe test program for selected areas of the proposed project. The objectives of the testing were to:

(1) Determine the presence/absence of subsurface prehistoric and/or historic resources within the tested areas:

(2) Establish the vertical and horizontal extent of the cultural deposits; and,

(3) Evaluate the integrity and significance of any cultural materials for inclusion on the California Register of Historical Resources.

The results of the testing program were to be used to develop any mitigation measures/recommendations including:

(1) Re-engineering to avoid significant cultural resources;

(2) The scientific removal of any significant cultural material and human remains that could be damaged by construction of the proposed power plant; and,

(3) The development of an archaeological monitoring program for subsurface construction[4].

5.2 PROGRAM PARAMETERS

The backhoe testing program focused on three areas within the proposed Metcalf Energy Center [Figure 3]. Area 1 (North), the proposed location for the generation plant and support facilities, covers the area north of the proposed south boundary fence to the south bank of Fisher Creek [Figures 4 and 6]. Area 2 (South), the alignment for the proposed access road and a probable utility corridor, parallels the west side of the Monterey Road/Union Pacific Railroad tracks from Blanchard Road north to the proposed south boundary fence of Area 1 [Figure 5]. Area 3 consists of two discrete loci in the immediate vicinity of Fisher Creek in the area south of the Area 1 boundary fence and north of Blanchard Road. These loci each had several culturally modified Franciscan chert flakes noted during the field inventory (Dr. James C Bard, CH2M HILL, personal communication, 1999).

5.2A Test Program Strategy and Procedures

Twenty-four backhoe test units (BTU), generally ca. 2 feet wide and 5-10 feet long by 6-8+ feet deep, were excavated between August 24-25. Fourteen BTUs were placed in Area 1, seven in Area 2 and three in Area 3 (two in one locus and one in the other) [Figure 3]. All BTUs were intuitively placed except for the three in Area 3, which were placed within the defined area of each locus. Unit placement in Area 1 was constrained by existing buildings, structures and numerous trash disposal locations. Units in Area 2 were placed just west of an existing unimproved road to avoid the Union Pacific Railroad right-of-way and to minimize crop damage at the property owner's request. No testing was undertaken in the area between the proposed south boundary fence and Blanchard Road to avoid damage to existing field crops.

4. Subsurface construction impacts could include building pad construction, excavation for road, footings and trenches to install storm drains, sanitary sewers, and utilities.

Standard recordation methods were used including schematic profiling and photography. A no collection policy was followed. All BTUs were backfilled (but not mechanically compacted) after recordation. A no collection policy was followed.

Dr. Colin I. Busby directed the field program with the assistance of Mr. Stuart Guedon, Mr. Robert M. Harmon and Ms. Melody Tannam. Mr. Robin McClintock, Archaeologist, CH2M HILL, provided additional assistance during the field program.

5.3 TESTING RESULTS

No prehistoric or significant historic artifacts or ecofacts were observed either on the surface or in the sediments excavated from the 24 BTUs. The BTUs were notable for the absence of baked clay and *Cerithedia* sp. Shell, which are generally associated with prehistoric sites in the general Santa Clara Valley area.

5.3A Soils and Stratigraphy [see Figs. 7-9]

The ambient soils within the project area include Yolo silty clay loam[5] (east half of property roughly between Blanchard Road and Fisher Creek north bank) with the western half Sunnyvale silty clay[6] (between Blanchard Road and north and east banks of Fisher Creek). A small finger of Campbell silty clay loam extends north from Blanchard Road approximately 500 feet into the field crop area. The area is flat with a less than one percent slope (USDA/SCS 1974). The general stratigraphy and sediments conform to descriptions of the Yolo and Sunnyvale series (USDA/SCS 1974). The sediments are generally silty alluvium of uniform color with no noticeable stratigraphy. Certain BTUs had a very coarse pebble gravel to cobble gravel stratum present. Excavation was not completed in these units due to extreme sidewall slumping when this gravel layer was excavated. Several BTUs also had a compacted, possibly high clay content sediment at the base below 8-10 feet. Soil color and texture changes with depth were generally minimal in the profiles and appear to be related to differential moisture content and soil formation processes (i.e., presence of increased organic material near surface).

Representative Profiles 1, 13, 23

Area 1 (North) (Unit 1) [Figure 7]

Stratum A: Yellowish brown to dark yellowish brown silty loam (10YR 5/4 to 10YR 4/4, dry). This stratum includes the plowzone layer with some organic materials and a few small rootlets and other organic materials. Thickness was roughly six feet. The boundary between strata was generally diffuse and straight. Culturally sterile except for some modern trash inclusions on surface.

Stratum B: Sandy fine textured sediment noted below six feet to base of unit (8 feet). Color same as Stratum A. Culturally sterile.

---

5. The Yolo series consists of well-drained loams that are underlain by alluvium from sedimentary rock. These soils are on alluvial plains and fans and have slopes of 0 to 9 percent. In a representative profile, the surface layer is grayish-brown, neutral and mildly alkaline loam about 29 inches thick. The substratum is brown, mildly alkaline silt loam to a depth of 60 inches or more. In some places the surface layer is silty clay loam.

6. The Sunnyvale series consists of poorly drained silty clays that are underlain by alluvium from material derived from sedimentary rock. In a representative profile, the surface layer is dark dray, calcareous, moderately alkaline silty clay about 14 inches thick. It is underlain by light-gray and gray, calcareous, moderately alkaline clay to a depth of 60 inches or more.

Area 1 (North) (Unit 13) [Figure 8]

Stratum A: Brown/dark brown to dark brown silty clay (10YR 4/3 to 10YR 3/3, dry). This stratum includes the plowzone layer with some organic materials and a few small rootlets and other organic materials. Thickness was roughly seven plus feet. No other strata noted although at seven feet below surface, sediment appears to have slightly higher clay content. Culturally sterile except for some modern trash inclusions on surface.

Area 3 (Unit 23) [Figure 9]

Stratum A: Silty clay - very dark grayish brown (10YR 3/2, damp) to ca. five feet below surface where color changes to dark yellowish brown (10YR 4/4, damp) but no indication of a distinct strata (Note: color change probably due to decrease in organic materials). This stratum includes the plowzone layer with some organic materials and a few rootlets and other organic materials. Thickness was roughly seven plus feet. Culturally sterile.

6.0 FINDINGS AND RECOMMENDATIONS

The backhoe testing program focused on three areas within the proposed Metcalf Energy Center. Area 1 (North), the proposed location for the generation plant and support facilities; Area 2 (South) the alignment for the proposed access road and a probable utility corridor; and, Area 3, two discrete loci in the immediate vicinity of Fisher Creek. All test units were intuitively placed except for the three in Area 3, which were placed within the defined area of each locus. The testing program was undertaken to determine the presence/absence of subsurface cultural resources, establish their horizontal and vertical extent and determine the integrity and significance of any resource(s).

Twenty-four backhoe test units (BTU) were excavated with 14 units in Area 1, seven in Area 2 and three in Area 3. No BTUs were placed in the area between the proposed south boundary fence and Blanchard Road to avoid damage to existing field crops.

No cultural materials were exposed in any of the 24 BTUs. No further management is required for Areas 1 and 2 including monitoring during subsurface construction.

For Area 3, it is recommended that an archaeological monitoring program be implemented during subsurface construction since this area is adjacent to Fisher Creek and minor surface cultural material was noted during the field inventory at two loci. Monitoring within 100 feet of the loci and within an area approximately 150 feet east of Fisher Creek from the northernmost loci south to Blanchard Road is recommended to ensure that as yet unknown cultural resources are not inadvertently affected by project related activities. The duration and intensity of the monitoring program should be determined by the Monitoring Archaeologist. The program could range from full time monitoring to "as needed" inspections on either a regular or intermittent basis throughout ground disturbing construction operations.

The Monitoring Archaeologist, in the case of an "inadvertent discovery", should have the authority to temporarily halt construction operations within 25 feet of a find or resource exposure to determine if significant or potentially significant cultural resources are present and if they will be adversely affected by continuing construction operations. Potential mitigation measures could include additional research, evaluation, collection, recordation, analysis, etc. of any significant cultural materials followed by a professional report.

It is further recommended that a cultural resources contingency clause be included in the General Conditions section of any excavation contracts to alert the contractor to the potential for the exposure of Native American and/or possibly significant historic era cultural resources during

subsurface construction and the field and notification procedures to be followed in the event of their discovery.

7.0 REFERENCES CITED AND CONSULTED

Anastasio, R.L., J.C. Bard, R.J. Dezzani, A.E. Barber, C.I.Busby, D.M. Garaventa, S.A. Guedon, R.M. Harmon, M.D. Meyer, and M.E. Tannam.

1986 Presence/Absence Testing at CA-SCL-574, Koll Road II — Between Bailey Avenue and Koll Road I, City of San Jose, Santa Clara County, California. MS on file, S-11913, CHRIS/NWIC, SSU, Rohnert Park.

1987a Presence/Absence Testing at CA-SCL-2, Bailey Avenue Near Santa Teresa Boulevard, City of San Jose, Santa Clara County, California. MS on file, S-11915, CHRIS/NWIC, SSU, Rohnert Park.

1987b *Presence/Absence Testing at CA-SCL-573 within Proposed Highway 101/Bailey Avenue Interchange, City of San Jose, Santa Clara County, California.* MS on file, S-11916, CHRIS/NWIC, SSU, Rohnert Park.

1990 Presence/Absence Testing at CA-SCL-573 within Proposed Highway 101/Bailey Avenue Interchange, City of San Jose, Santa Clara County, California. MS on file, S-14879, CHRIS/NWIC, SSU, Rohnert Park.

Bard, J.C., M.C. Kennard, L.R. Porter, C.I. Busby and M.E. Tannam

1982 A Backhoe Testing Program of CA-SCL-2, Santa Teresa Research Park, Santa Clara County, California. MS on file, S-7506, CHRIS/NWIC, SSU, Rohnert Park.

Bard, James C. and Robin McClintock

1999 Cultural Resources Study for Metcalf Energy Center, City of San Jose, Santa Clara County, California. In Application of Certification for Metcalf Energy Center, Calpine Corp. and Bechtel Enterprise Holdings, for submission to the California Energy Commission. On file, CH2M HILL, Sacramento and Calpine Corp., Pleasanton.

Basin Research Associates

1999 Presence/Absence Testing Program Field Notes and Photographs. Metcalf Energy Center, August 24-25, 1999. On file, Basin Research Associates, San Leandro.

Bean, Lowell John (compiler and editor)

1994 The Ohlone Past and Present: Native Americans of the San Francisco Bay Region. Ballena Press Anthropological Papers 42, Menlo Park.

Beck, W.A., and Y.D. Haase

1974 Historical Atlas of California. University of Oklahoma Press, Norman.

Broek, J.O.M.

1932 The Santa Clara Valley, California: A Study in Landscape Changes. N.V.A. Oosthoek's utig. maatij., Utrecht.

California (State of), Department of Parks and Recreation, Office of Historic Preservation (**CAL/OHP**)

1997 Title 14 Chapter 11.5. Regulations for California Register of Historical Resources. Effective January 1, 1998.

1999a Historic Properties Directory for Santa Clara County. Office of Historic Preservation, Department of Parks and Recreation, Sacramento. Copy provided by CHRIS/NWIC, SSU, Rohnert Park.

1999b Archeological Determinations of Eligibility for Santa Clara County. Office of Historic Preservation, Department of Parks and Recreation, Sacramento. Copy provided by CHRIS/NWIC, SSU, Rohnert Park.

Daniel, Mann, Johnson, and Mendenhall, and W.R. Hildebrandt

1983 Archaeological Research of the Southern Santa Clara Valley Project: Based on a Data Recovery Program from Sites CA-SCl-54, CA-SCl-163, CA-SCl-178, CA-SCl-237, and CA-SCl-241. MS on file, S-6369, CHRIS/NWIC, SSU, Rohnert Park.

Dietz, Stephen, A.

1977 Final Report of Archaeological Test Excavations of Freeway 04- SCl-101, Post Mile 17.2/29.4, Cochrane Road to Ford Road. MS on file, E-265/S-4395,CHRIS/NWIC, SSU, Rohnert Park.

Elsasser, A.B.

1978 Development of Regional Prehistoric Cultures. In *California*, edited by R.F. Heizer, Volume 8. Handbook of North American Indians, W.G. Sturtevant, general editor, pp. 37-57. Smithsonian Institution, Washington, D.C.

1986 Part I: Review of the Prehistory of the Santa Clara Valley Region, California. Coyote Press Archives of California Prehistory 7, Salinas.

Findlay, J.M.

1980 History of North First Street Redevelopment Area, San Jose, Ca. MS on file, Basin Research Associates, San Leandro.

Galvan, P.

1967/68 People of the West: the Ohlone Story. Indian Historian 1920:9-13.

Hall, F.

1871 The History of San Jose and Surroundings, with Biographical Sketches of Early Settlers. A.L. Bancroft, San Francisco.

Hall, J., M. Hylkema and L. Leach-Palm

1988 Archaeological Excavations of Human Burials and a Rock Feature at CA-SCl-178 4-SCl-101 17.2/29.4 4216 - 117321. MS on file, S-10230, CHRIS/NWIC, SSU, Rohnert Park.

Hart, J.D.

1978 Companion to California. Oxford University Press, New York.

Hendry, G.W., and J.N. Bowman
1940 The Spanish and Mexican Adobe and Other Buildings in the Nine San Francisco Bay Counties, 1776 to about 1850. MS on file, Bancroft Library, University of California, Berkeley.

Hoover, M.B., H.E. Rensch, E.G. Rensch and W.N. Abeloe
1966 Historic Spots in California. Stanford University Press, Palo Alto.

James, W.F., and G.H. McMurry
1933 History of San Jose, California, Narrative and Biographical. A.H. Cawston, San Jose.

King, C.D.
1974 Modern Santa Clara Ethno-Geography. In Archaeological Element Environmental Impact Report on the San Felipe Water Distribution System, edited by T.F. King and G. Berg, Appendix I. MS on file, E-108/S-4248, CHRIS/NWIC, SSU, Rohnert Park.

1977 Matalan Ethnohistory. In Final Report of Archaeological Test Excavations of Freeway 04- SCl-101, Post Mile 17.2/29.4, Cochrane Road to Ford Road, edited by S.A. Dietz. MS on file, E-265/S-4395, CHRIS/NWIC, SSU, Rohnert Park.

1978a Protohistoric and Historic Archaeology. In *California*, edited by R.F. Heizer, Volume 8. Handbook of North American Indians, W.G. Sturtevant, general editor, pp.58-68. Smithsonian Institution, Washington, D.C.

1978b Historical Indian Settlements in the Vicinity of the Holiday Inn Site. In Archaeological Investigations at CA-SCl-128, the Holiday Inn Site, edited by J.C. Winter. MS on file, E-756/S-5281, CHRIS/NWIC, SSU, Rohnert Park.

King, T.F.
1973 Archaeological Impact Evaluation: San Felipe Division, Central Valley Project. Part II The Direct Impact of San Felipe Division Facilities on Archaeological Resources. For U.S. Department of Interior, National Park Service, and the Frederick Burk Foundation, California State University, San Francisco. MS on file, E-4/S-1849, CHRIS/NWIC, SSU, Rohnert Park.

King, T.F. and P.P. Hickman
1973 Archaeological Impact Evaluation: San Felipe Division, Central Valley Project. Part I The Southern Santa Clara Valley, California: A General Plan for Archaeology. For U.S. Department of Interior, National Park Service, and the Frederick Burk Foundation, California State University, San Francisco. MS on file, E-4/S-1849, CHRIS/NWIC, SSU, Rohnert Park.

Kroeber, A.L.
1925 Handbook of the Indians of California. Bureau of American Ethnology Bulletin 78. Government Printing Office, Washington, D.C.

Levy, R.
1978 Costanoan. In *California*, edited by R.F. Heizer, Volume 8. Handbook of North American Indians, W.G. Sturtevant, general editor, pp. 485-497. Smithsonian Institution, Washington, D.C.

Margolin, M.
1978 The Ohlone Way: Indian Life In the San Francisco - Monterey Bay Area. Heyday Books, Berkeley.

Miller, L.R.
1948 The History of the San Jose and San Francisco Railroad. M.A. thesis, University of California, Berkeley.

Milliken, R.T.
1995 A Time of Little Choice: The Disintegration of Tribal Culture in the San Francisco Bay Area 1769-1810. Ballena Press Anthropological Papers No. 43.

Moratto, Michael J.
1984 California Archaeology. Academic Press, New York.

Sawyer, E.T.
1922 History of Santa Clara County, California. Historic Record Company, Los Angeles.

Thompson, A.W.
1857 Map of the Survey of the *Rancho La Laguna Seca*, Including part of Santa Teresa. Finally confirmed to Liberata C. Bull et al. Heirs of Wm [William] Fisher. Surveyed under the directors of the U.S. Surveyor General. February 1857. Map on file, #196, California State Office, Bureau of Land Management, Sacramento.

Thompson, G. H. and A.T. Herrmann
1881 Plat of the Pueblo Lands of San Jose. Finally confirmed to Mayor and Common Council of the City of San Jose. Surveyed under Instruction from The United States Surveyor General by G. H. Thompson (1866) and A.T. Herrmann (1879). Final Approval April 2nd, 1881. Map on file, California State Office, Bureau of Land Management, Sacramento.

Thompson and West
1876 Historical Atlas of Santa Clara County, California. Thompson and West, San Francisco (reprinted by Smith and McKay, San Jose, 1973).

United States Department of Agriculture, Soil Conservation Service **(USDA/SCS)**
1974 Soil Survey of Eastern Santa Clara Area, California. Government Printing Office, Washington, D.C.

United States Department of Agriculture Soil Conservation Service with the California Agricultural Experiment Station
1968 Soil Survey, Santa Clara Area, California. Series 1941, No. 17. United States Department of Agriculture, Government Printing Office, Washington, D.C.

United States Department of Interior, Geological Survey **(USGS)**
1980a Morgan Hill, Calif. [Quadrangle]. Topographic map, 7.5' series. Map on file, United States Geological Survey, Menlo Park (1955, photorevised 1980).

1980b Santa Teresa Hills, Calif. [Quadrangle]. Topographic map, 7.5' series. Map on file, United States Geological Survey, Menlo Park (1953 photorevised 1980).

United States Department of the Interior, National Register of Historic Places, National Park Service **(USNPS)**

1999 National Register of Historic Places Index by Property Location. Properties in California, listed, determined, and pending. Copy on file, Basin Research Associates, San Leandro.

Wallace, John

1858 Plat of the *Rancho Yerba Buena or Socayre* [finally confirmed to] Antonio Chaboya. Surveyed under instructions from the U.S. Surveyor General by John Wallace, Dep[upty] Sur[veyo]r. October 1858. Map on file, #183, Bureau of Land Management, Sacramento.

Note: The abbreviation CHRIS/NWIC, SSU, Rohnert Park is used for the California Historical Resources Information System, Northwest Information Center, Sonoma State University, located at Rohnert Park.

Attachment CR-35

Insert Figures 1

Insert Figures 2

Insert Figures 3

Insert Figures 4

Insert Figures 5

Insert Figures 6

Insert Figures 7

Insert Figures 8

Insert Figures 9